Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED CONVENTIONAL HOUSING DEVELOPMENT COMPRISING 2 UNITS OF 3-STOREY SEMI-DETACHED DWELLING HOUSE WITH AN ATTIC (SEMBAWANG GREENVALE PHASE 1) AND 15 UNITS OF 3-STOREY TERRACE DWELLING HOUSE WITH AN ATTIC (SEMBAWANG GREENVALE PHASE 2)

For

SPRING COAST DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Hia Chuen Ling

Authorised By: Richard Teo

Date: 26 June 2009

TABLE OF CONTENTS

SECTION	DESCRIPTION
-	**TITLE PAGE**
-	**TABLE OF CONTENTS**
1	**QUALITY PLAN CONTROL AND DISTRIBUTION**
1.1	List of Copy Holders
1.2	Revision Record
2	**PROJECT INFORMATION**
2.1	Project Description
2.2	Project Cost
2.3	Scope of Works
3	**ORGANISATION**
3.1	Organisation Chart
3.2	ACEPL's Project Team Member
3.3	Client/Client's Representative
3.4	Other Consultants
	- Local
	- Overseas – Not Used
3.5	Contractor/Sub-Contractors – Not Used
3.6	Authorities – Not Used
4	**PROGRAMME**
4.1	Overall Programme – Not Used
4.2	Authority Submission Status for M&E Services – 1st Submission – Not Used
4.3	Authority Submission Status for M&E Services (Amendment) – 2nd Submission – Not Used
5	**PROJECT RECORDS**
5.1	List of Internal Files
5.2	Filing of Drawings

TABLE OF CONTENTS

SECTION	DESCRIPTION
6	**INTERFACING**
6.1	Method of Interface – Not Used
6.2	Internal Design Interface
6.3	Circulation of Documents to External Parties
7	**WORK AUTHORISATION**
8	**DESIGN INPUT AND METHODOLOGY**
8.1	List of Client's Standards, Reference Documents or Brief – Not Used
8.2	List of Applicable Code of Practice and Regulations
8.3	List of Design Guide or Handbook Used
8.4	List of Applicable Quality System Procedures
8.5	List of Software Used for Design/Analysis – Not Used
9	**ENVIRONMENTAL CONSIDERATIONS**
9.1	Sustainable Design Features / Criteria – Not Used
9.2	Site PPE Requirement
9.3	Site Emergency Preparedness
9.4	Reporting of Environmental Non-conformances
9.5	List of Applicable Environmental Management System Procedures
10	**CLIENT'S REQUIREMENTS**
10.1	List of Output Required by Client
10.2	Specific Procedures Required by Client – Not Used
11	**LIST OF SUB-JOB**
11.1	List of Sub-Job Numbers – Not Used

SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	6087-PQP File	26 June 2009

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	26 June 2009	1 to 11	28	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	Phase 1 – 579.00 Phase 2 – 2923.10
Nett Floor Area, m²	N.A
Gross Floor Area, m²	Phase 1 – 701.76 Phase 2 – 4673.72
Covered Carpark, m²	N.A
No. of Covered Carpark Lots	N.A
No. of Apartments/Houses	17 units (Phase 1 – 2 Semi-D Houses; Phase 2 – 15 Terrace Houses
No. of Beds (for Hospitals)	N.A
No. of Guestroom (for Hotels)	N.A
No. of Blocks / No. of Storeys	N.A
No. of Phases	Phase 1 & 2

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate										
Awarded										

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate			
Awarded			

Site Clearance shall include earth work, soil improvement, service diversion and termination.

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

Conceptual/Schematic Design	√
Detailed Design	√
Tender Documentation	√
Tender Evaluation	√
Contract Supervision	√
M&E Costing	√
Submissions to Authority	√

(✓*where applicable*)

2.3.2 Scope of M&E Services

ELECTRICAL	√	AIR CONDITIONING	√	SPRINKLER		SANITARY	√	SWIMMING POOL	√
LIFT		MECHANICAL VENTILATION	√	FIRE ALARM		COLD WATER	√	STEAM BOILER	
ESCALATOR		MECHANICAL SMOKE EXTRACT		HOSEREEL		HOT WATER	√	FUEL STORAGE	
PABX		COMPUTER A/C		WET RISER		TOWN GAS			
SECURITY		BST CARPARK EXH		DRY RISER		LPG GAS			
TELELIFT		HEATING				MEDICAL GAS			
DATA COMM.		AUTOGATE CONTROL	√						
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

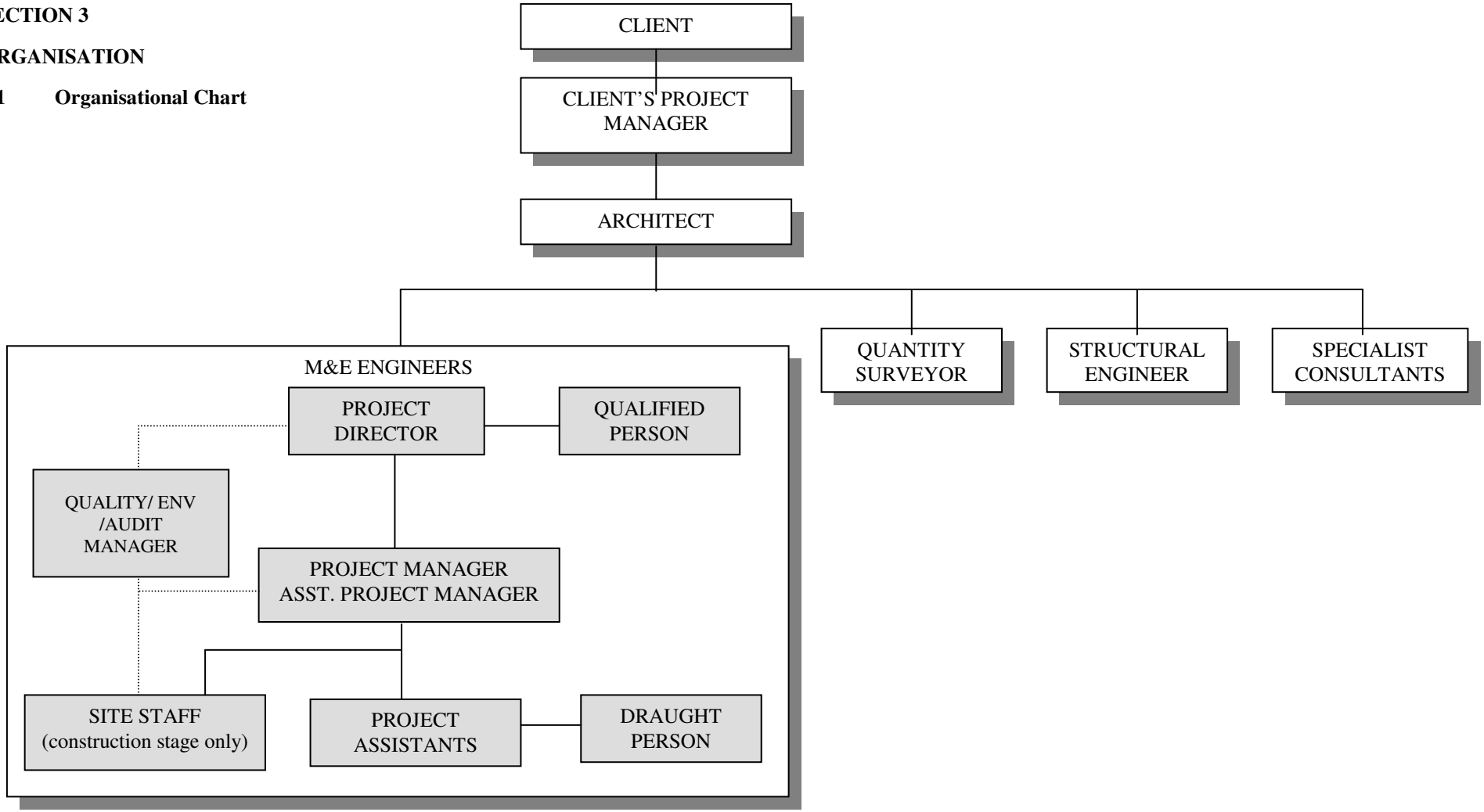
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Richard Teo
Qualified Person	Mechanical	Choong Choon Guan
	Electrical	Richard Teo
Project Manager		Hia Chuen Ling
Assistant Project Manager		Serene Teh
Project Assistant (Mech)		
Project Assistant (Elect)		
Draughtsperson		Common Pool
Resident Engineer (M&E)		
Assistant Resident Engineer (M&E)		
Clerk-of-Work (M&E)		

3.3 Client/Client's Representatives

Client:- Spring Coast Development

Address:- 65 Chulia Street #45-01
OCBC Centre
Singapore 049513

Tel:- 6538 2372

Fax:- 6538 5217

Client's Representatives:- SE Alliance Management Pte Ltd

Name of Company	Contact Person	Contact
SE Alliance Management Pte Ltd	Name: Raymond Ong Position: General Manager	Tel: 6538 2372 Fax: 6538 5217 Handphone: - Email: raymondong@singapore-e.com.sg
	Name: Lim Ling Huey Position: Senior Project Executive	Tel: 6236 0252 Fax: 6538 5217 Handphone: Email: LHLim@singapore-e.com.sg
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect ADDP Architects	Name: Tang Kok Thye Position: Principal Architect	Tel: 6220 2153 Fax: 6325 4918 Handphone: - Email: kokthye@addp-do.com.sg
Quantity Surveyor Northcroft Lim Consultants Pte Ltd	Name: James Loo Teck Ming Position: Director	Tel: 6220 7188 Fax: 6222 0868 Handphone: - Email: nlc@northcroft.com.sg
Structural Engineer DE Consultants (S) Pte Ltd	Name: Megan Hoon Position: Director	Tel: 6227 3900 Fax: 6227 2909 Handphone: - Email: deconsult@pacific.net.sg
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Overseas) - **NOT USED**

Function / Name of Company	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: Handphone: Email:
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.5 Contractors/Sub-Contractors – NOT USED

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Electrical Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Lift & Escalator Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Carpark System Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
_____		Name: Position:	Tel: Fax: Handphone: Email:

** Type of Contract*
- *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

3.6 Authorities – NOT USED

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station		
(b) Diversion		
SP Services:		
(a) Customer Supply		
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV		
(b) SingTel		
(c) IDA		
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan		
(c) Diversion		
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU		
(b) M&E Plan		
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission		
(b) Installation/Inspection		
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme – NOT USED

ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
6.	Tender Period for Piling																									
7.	Tender Period for Sub-Structure																									
8.	Tender Period for Super-Structure																									
9.	Piling Period																									
10.	Sub-Structure Construction Period																									
11.	Super-Structure Construction Period																									
12.	TOP																									
13.	CSC																									

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission – NOT USED

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission – NOT USED

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
- Owner	√	- Architect	√
- Authorities	√	- Other Consultants	√
- Contractors	√	- CC	√
- CF	√	- PQP/QSP	√

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	

(✓*where applicable*)

SECTION 5

PROJECT RECORDS

5.2 Filing of Drawings

The following team members shall take charge of filing of drawings, stamping "SUPERSEDED" drawings, etc.

<table>
<tr><th>Description</th><th>Team Member</th></tr>
<tr><td>Incoming Architectural Floor Plans</td><td rowspan="8">(All project drawings in soft copy to be saved in server)</td></tr>
<tr><td>Incoming Architectural Sketches/Details</td></tr>
<tr><td>Incoming Structural Drawings</td></tr>
<tr><td>M&E Drawings
- Electrical Installation
- Lift & Escalator Installation
- Air Conditioning & Ventilation Installation
- Fire Fighting & Alarm Installation
- Plumbing & Sanitary Installation
- Swimming Pool & Filtration Installation</td></tr>
<tr><td rowspan="5">Other Drawings</td><td></td></tr>
<tr><td>- Electrical Shopdrawings</td><td>HCL</td></tr>
<tr><td>- Mechanical Shopdrawings</td><td>ST</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
</table>

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	N.A
	Pre-planned meeting at fixed intervals	√
	Telefax, letter and telephone	√
	Email	
Interface With External Design Teams	M&E Design Report	
	Pre-planned meeting at fixed intervals	√
	Telefax, letter and telephone	√
	Email	√
Interface Between Internal Design Teams	Telephone	√
	Email	√
	Internal Project Team Meeting	√
	Circulation of Information	√

(✓*where applicable*)

SECTION 6

INTERFACING

6.2 Internal Design Interface – NOT USED

Item No.	Description*	Required From	Required By	Date Required	Remarks

** Information required by INTERNAL DESIGN TEAM MEMBERS*

SECTION 6

INTERFACING

6.3 Circulation of Documents to External Parties

	Code: A - Approval Required C - For Comments I - For Information Only	Client/ Client Rep.	Client's Project Manager	Architect	Structural Engineer	Quantity Surveyor	
1.	**Letters/Fax:**						
a.	Project Design		I	I	I	I	
b.	Project Administration		I	I	I	I	
c.	Project Cost Estimate/Contract Cost		C	I		I	
2.	**Drawings**						
a.	Outline Design Drgs.						
b.	Sketch Design Drgs.		C	C			
c.	Final Design Drgs.		C	C			
d.	Shop Drawings		C	C			
e.	As Built Drgs.		I				
3.	**Other Document**						
a.	Specification		C			I	
b.	Tender Document		I	I		I	
c.	Tender Evaluation Report		A	I		I	
d.	Design Report		C	I			
e.	Progress Report						
f.	Financial Report		A	I		I	
g.	Minutes of Meeting						
h.	Inspection Report		I				
i.	Testing & Comm. Report		I				
j.	O & M Manual		I				

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	AE	SS
General Correspondences with Client			√		
General Correspondences with Other Consultants			√		
M&E Cost Estimate Report	√				
M&E Design Report	√				
Check Prints			√		
Tender Drawing Approval			√		
Tender Specification Approval			√		
List of Tenderers	√		√		
Tender Questionaires	√		√		
Tender Reports	√				
Draft Letter of Award			√		
Review of Contractor's Shop Drawing			√		
Review of Contractor's Technical Submittal			√		
Review of Contractor's Sample Submittal			√		
Contractor's Request for Deviation	√	√	√		
Progress Payment Valuation Form	√		√		
Final Account Valuation	√		√		
Draft Variation Order			√		
Engineer/Architect's Instruction/Direction			√		
Site Instruction/Direction			√		√
Correspondence/Submission to Authorities		√	√		

(✓*where authorised*)

Key to abbreviations:-

PD : Project Director
QP : Qualified Person
PM : Project Manager/Assistant Project Manager
AE : Assistant Engineer
SS : ACEPL Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief – NOT USED

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	~~BS~~	SS	IEE	~~NFPA~~		
Lightning Protection System	BS	SS				
~~Emergency Voice Communication System~~	~~BS~~	~~SS~~	~~NFPA~~			
Air Conditioning & Ventilation Installation	BS	~~AS~~	~~NFPA~~	SS	~~MS~~	
~~Lift & Escalator Installation~~	~~BS~~	~~SS~~				
~~Sprinkler System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~LPC~~	
~~Wet Riser System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~	
~~Automatic Fire Alarm System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~	
Sanitary System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~	
Plumbing System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~	
~~Town Gas/LPG Supply System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~		
~~Boiler and Steam Supply System~~	~~ASME~~	~~BS~~	~~AS~~			
~~Mechanical Smoke Control System~~	~~BS~~	~~NFPA~~	~~AS~~			

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Applicable Quality System Procedures

Alpha Consulting Engineers Pte Ltd's Quality Management System Procedures

Section	Title	✓ where applicable
M1	Preparation of Consultancy Offer	√
M2	Project Commissioning and Service Agreement	√
M3	Design Control	√
M4	Design Change Control	√
M5	Tender Process and Evaluation	√
M6	Authority Submission	√
M7	Construction Process Control	√
M8	Testing and Commissioning	√
S1	Document Control	√
S2	Documentation of Quality & Environmental Management System Procedure	√
S3	Documentation of Project Quality Plan	√
S4	Specification Control	√
S5	Library Control	√
S6	Archive Control	√
S7	Filing Control	√
S8	Drawing Control	√
S9	Administration Control	√
S10	Purchasing Control	
S11	Training Control	
S12	Computer Control	
QE1	Quality & Environmental System Audit	
QE2	Feedback Reporting	
QE3	Clients Feedback	
QE4	Management Review	

8.5 List of Software Used For Design/Analysis – NOT USED

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Calculux	2.30	Philips	Lighting design	
Cophos	3.31	Zumtobel	Lighting design	
Carrier E20-II	3.21	Carrier	Programme for determination of heat load, duct size and its losses, etc.	
Gensize 2	2.1	Onan	Generator sizing	
Lift Traffic	-	Alpha Consulting Engineers Pte Ltd	Lift traffic calculation	
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Fault Level Calculation	-	Alpha Consulting Engineers Pte Ltd	Calculation of voltage drop and fault level	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria – NOT USED

Item	Remarks
Green Mark criteria	
Green Design Features	

9.2 Site PPE Requirement

The necessary Personal Protective Equipment (detailed below) shall be provided by the main contractor / Company in accordance to the site EHS requirements prior to the site monitoring.

PPE	✓ where applicable
Safety Helmet	√
Safety Shoes	√
Eye Protection	N.A
Ear Protection	N.A
Safety Harness / Belt	
Others:	

9.3 Site Emergency Preparedness

Site staff shall comply with the site emergency preparedness and response procedure, established by the main contractor / owner, which shall include the following details.

Items	✓ where applicable
Evacuation Route	√
Emergency Exit	√
Assembly Point	√
Emergency Contact List / Person	√
Alarm system / methods	N.A

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.4 Reporting of Environmental Non-conformances

When encountering environmental non-conformances, Site Staff shall be responsible to feedback to the main contractor.

9.5 List of Applicable Environmental management system Procedures

Alpha Consulting Engineers Pte Ltd's Environmental Management System Procedures

Section	Title	✓ where applicable
E1	Aspect / Impact Identification, Risk Assessment & Risk Control	
E2	Identifying Legal & Other Requirements	√
E3	Objectives, Targets & Programmes	
E4	Communication	√
E5	Emergency Preparedness & Response	√
E6	Monitoring & Measurement	
E7	Control of Air & Noise Pollution	
E8	Management of Wastes	

SECTION 10

CLIENT'S REQUIREMENTS

10.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	N.A
M&E Cost Estimate Report	A
Pre-Qualification of Tenderers	A
Tender Documents	A
Tender Report	A
Payment Valuation for QS	I
Certificates of Supervision for TOP/CSC	Re

** Remarks*

A: for approval C: for comment I: for Information Re: for record

Other purposes and for action: please specify.

10.2 Specific Procedures Required By Client *(If applicable)*

NOT USED

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers – NOT USED

Sub Job No	Description	Allocation Details